

Layering of protocols offers several well-known advantages, such as, for example, reduction of a network design complexity, but, on the other hand, layering introduces overhead which increases delays in communication and typically leads to performance inefficiencies. The present invention provides a number of techniques allowing to model protocol layering and detect where performance inefficiencies occur in the stack of protocol layers. Furthermore, after common execution paths are identified in the protocol stacks, these paths are optimized by using optimization techniques, such as optimizing the computation, compressing protocol headers, and delaying processing. All of the optimizations are automated in a compiler with the help of minor annotations by the protocol designer.

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